Matthew Felton
STEM Leadership Seminar
Feb 7th, 2023

● What is the title of your STEM professional development?
Spheros and beyond!

● Why did you select the topic?
Our school has received a grant from the town of Vail and with a portion of that money the school has purchased a classroom set of 30 Sphero robots. We have had the robots for many months now and looking at the checkout log, there have only been two teachers to check them out, with one of those teachers being myself.

● How does your PD integrate NASA assets and/or content from the Endeavor courses?
We spent an entire semester with coding/robotics/1:1 devices that really turned me onto what we could do with programming and introducing our students to robotics. I use VEX robotics kits at the 5th grade level, but Sphero robots are very accessible and with a little bit of training could be used at many grade levels. Our school has just recently moved to a one to one device model and every student in our district has a device.

● Who is your proposed audience? Which teachers will you serve with your PD
and activities? What grades, subjects, and how many students do they teach?
This will be available for teachers at all grade levels. This will affect all of the children at RSES which is a total of 252. I will also send this to our ED tech team and have them blast it out in their newsletter. This will open it up to other teachers, but since most other schools don't have the same PLC time as we do, they may not be able to attend. If we end up having it after school that will open the door for a few more participants.

● What STEM concepts or learning goals will you and your materials address which
can potentially replace other classroom activities?
The learning goals will center around how to use the Spheros and different ways to incorporate them into different classroom activities, not just science.

● List NGSS and CCSS or your state standards.

MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

CCSS.MATH.CONTENT.7.RP.A.2: Recognize and represent proportional relationships between quantities.

● How long will the session be? How will you recruit your audience? Where will you advertise your PD session?

The PD sessions will be one hour long. I am hoping to use our PLC time in May, which will allow me to work with our entire staff. That will take care of the recruitment piece as all teachers will be in attendance. If we are unable to work it into PLC, I will hold the PD afterschool and will advertise it through our ED tech team newsletter.

● To demonstrate that teachers have learned something new, you will generate a pre- and post-survey. What, in general, will your pre-survey and post-survey ask?

The pre-survey will center around the teachers understanding of robotics and coding. I want to gage their level of comfortability and mis-conceptions they may have about coding and robotics. The post survey will assess the same questions as before, but to see what has changed. I will also have an opportunity for follow up conversations lessons on integration of Spheros into classroom instruction.

● What outcomes or expectations do you hope to see for your educators?

My hope is that the teachers will leave with a basic programming knowledge and at least one or two lessons they can use with their students. As of now, only one other teacher in the building knows how to program a Sphero. At one of our PLCS in Jan the biggest reason teachers reported not using the robots is they aren't familiar with the program and how to use it. Many seemed interested in using them, but are unsure about it. I will also share various resources that teachers can use in their classroom to engage students around coding.

● How will you follow up with the teachers in attendance?

I will have a sign up sheet for follow up questions and partner planning. I am currently working with upper grade teachers 3-5 on a four week coaching cycle and would love to help folks integrate the Spheros into the classroom as part of their coaching. If a teacher from the lower grades would like to focus on it, We have monthly MTSS meetings in which I can follow up with their inquiries. I will also make myself available during lunch and afterschool, for follow up questions and inquiries.

● What data collection methods (e.g., surveys, interviews) will you use to analyze the PD's success?

I will use both a pre and post survey for the PD. They will show a progression of learning and comfortability around robotics and coding. I will also have a plus/delta chart for the attendees to fill out as an exit ticket for our PD. I am hoping each group will fill out a plus and a delta centered around the PD. The survey will also ask teachers what their next steps might look like moving forward with robotics.